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"ISM-IGM Interactions and Spiral Disks"

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This project involved *ROSAT* HRI observations of two spiral galaxies, NGC 2276 and NGC 1961, which appeared the best cases for seeing a current interaction between the interstellar and intragroup media. This process would be of interest not only for understanding the asymmetric forms of some nearby galaxies, but as a local model for what happens during the ISM stripping which is almost universally assumed to take place at some epoch in cluster environments.

Both HRI observations are of high quality. In the case of NGC 2276, we detect not only the nucleus, but the brightest star-forming regions and the diffuse disk emission as distinct X-ray components (this is perhaps the most distant spiral with such detections). The mildly active nucleus of NGC 1961 dominates its X-ray structure so strongly that we have only an integrated measure of its extranuclear flux. It is noteworthy that the *ROSAT* data do *not* confirm an earlier report, from heavily smoothed *Einstein* observations, of emission from an adjacent hot medium near NGC 1961.

Our analysis correlated results from the X-ray band with broad- and narrow-band optical results, as well as both continuum and H I measurements in the radio. These bands present plenty of peculiar properties of these systems. Both the star formation and chemical abundance gradients in NGC 2276 are asymmetric, perhaps a signature of radial gas transport, although the old stars show a similar asymmetry. Evidence for any H I stripping at its disk edges, however, is below the 3σ threshold from the VLA data, so that we are left with tidal effects as the least implausible cause of these asymmetries.

The nearest obvious perturbing companion is about 150 kpc away in projection, so this may be a case of global disk instabilities which were excited by a perturbation but are much more long-lived than the direct tidal response.

The manuscript detailing all these results is under review for the *Astrophysical Journal*; a copy is attached.